# ARTICLES BY TITLE

ARTICLES BY TITLE	
Index to Volume 43 January Through December,	1970
A categorical system of axioms for the complex numbers W. Bosch and P. Krajkiewicz A class of functions having elementary integrals for arc length	67
	42
A comparison of the Archimedean and completeness properties	92
A differential-functional equation; the complex case	263
A direct proof of the Steiner-Lehmus theorem	101
A geometric proof of the nonexistence of PG1S. H. Heath and C. R. Wylie, Jr.	192
A new necessary and sufficient condition for linear dependence of vectors in a finite dimen-	
sional vector space	157
A new proof of a combinatorial identity	162
A note on arc length	44
A note on generalized semilinear transformations	147
A note on linearity	75
A note on N!	64
A note on the equivalence of five theorems in analysis. R. H. Kupperman and H. A. Smith A note on the vector product $a \times (b \times c)$	81 150
A problem in geometrical probability. C. A. Grimm  A problem in geometrical probability. Eric Langford	237
A property of third order gnomon-magic squares	70
A representation formula for the solutions of the second order linear differential equation	10
E. J. Pellicciaro	77
A representation problem	130
A short proof of Cramer's rule	94
A short proof of the Urysohn metrization theorem	268
An all-purpose, 'floating-point' chart for the elementary arithmetic operations	
	82
An approach to trigonometric inequalities	254
An arithmetical problem involving the sum of integers in A. P	89
An exercise in vector identities	153
An implication of the Pythagorean theorem	186
An improved solution to "instant insanity"	20
Axis rotation via partial derivatives	211
Binary digital arithmetic. W. J. Pervin	41
Binary relations as Boolean matrices Oskar Feichtinger and B. L. McAllister	8
Certain distributions of unlike objects into cells	214 154
Complex number algebra as a simple case of heaviside operational calculus D. H. Moore	269
Congruence-preserving mappings	37
Defining the interchange of a loop	141
Dynamic proofs of Euclidean theorems R. L. Finney	177
Economic traversal of labyrinths	125
Extensions of the Weierstrass product inequalities M. S. Klamkin and D. J. Newman	137
General subtraction	145
Generalizations of the Sylvester problem	250
Geometry of generalized inverses	33
Inequalities for the Wallis product	30
In memoriam Samuel T. Sanders 1872–1970	175
More on vector representation of rigid body rotation	38
Morley's triangle	210
Morley's triangle theorem	209
Note on a nonlinear recurrence related to $\sqrt{2}$	143
On a Laplace integral	151

XI

# ARTICLES BY TITLE

ARTICLES BY TITLE	
Index to Volume 43 January Through December,	1970
A categorical system of axioms for the complex numbers W. Bosch and P. Krajkiewicz A class of functions having elementary integrals for arc length	67
	42
A comparison of the Archimedean and completeness properties	92
A differential-functional equation; the complex case	263
A direct proof of the Steiner-Lehmus theorem	101
A geometric proof of the nonexistence of PG1S. H. Heath and C. R. Wylie, Jr.	192
A new necessary and sufficient condition for linear dependence of vectors in a finite dimen-	
sional vector space	157
A new proof of a combinatorial identity	162
A note on arc length	44
A note on generalized semilinear transformations	147
A note on linearity	75
A note on N!	64
A note on the equivalence of five theorems in analysis. R. H. Kupperman and H. A. Smith A note on the vector product $a \times (b \times c)$	81 150
A problem in geometrical probability. C. A. Grimm  A problem in geometrical probability. Eric Langford	237
A property of third order gnomon-magic squares	70
A representation formula for the solutions of the second order linear differential equation	10
E. J. Pellicciaro	77
A representation problem	130
A short proof of Cramer's rule	94
A short proof of the Urysohn metrization theorem	268
An all-purpose, 'floating-point' chart for the elementary arithmetic operations	
	82
An approach to trigonometric inequalities	254
An arithmetical problem involving the sum of integers in A. P	89
An exercise in vector identities	153
An implication of the Pythagorean theorem	186
An improved solution to "instant insanity"	20
Axis rotation via partial derivatives	211
Binary digital arithmetic. W. J. Pervin	41
Binary relations as Boolean matrices Oskar Feichtinger and B. L. McAllister	8
Certain distributions of unlike objects into cells	214 154
Complex number algebra as a simple case of heaviside operational calculus D. H. Moore	269
Congruence-preserving mappings	37
Defining the interchange of a loop	141
Dynamic proofs of Euclidean theorems R. L. Finney	177
Economic traversal of labyrinths	125
Extensions of the Weierstrass product inequalities M. S. Klamkin and D. J. Newman	137
General subtraction	145
Generalizations of the Sylvester problem	250
Geometry of generalized inverses	33
Inequalities for the Wallis product	30
In memoriam Samuel T. Sanders 1872–1970	175
More on vector representation of rigid body rotation	38
Morley's triangle	210
Morley's triangle theorem	209
Note on a nonlinear recurrence related to $\sqrt{2}$	143
On a Laplace integral	151

XI

On an interesting metric space	95
On convex polyhedra	202
On defining the sine and cosine	72
On divisor functions	276
On e and its approximation	98
On improper multiple integrals	113
On some soluble Nth order differential equations	272
On the construction of multiple choice tests	213
On the construction of the real number system	257
On the leaf curves.  A. A. Aucoin	156
On the number of subsets of a finite set	36 197
Open mappings and the fundamental theorem of algebra	39
Policy on Book Reviews	1
Relation between correlation and eccentricity. W. E. Bleick	149
Relatively prime amicable numbers of opposite parity	14
Remark on the paper "Sums of squares of consecutive odd integers" by Brother U. Alfred	**
	212
Seminatural systems as nonempty, well-ordered sets without last element S. T. Stern	93
Solutions of $A^k + B^k = C^k$ in nonsingular integral matrices	275
Some comments about definitions	57
Tangent planes and differentiation	1
The circumradius of a simplex. V, F, Ivanoff	71
The existence of finite Bolyai-Lobachevsky planes	244
The Gram-Schmidt process is not so bad!	261
The number of segments needed to extend a cube to N dimensions	
	189
The packing of equal circles in a square	24
The truth-value of $\{ \forall, \exists, P(x, y) \}$ : a graphical approach	260
Two-dimensional lattices and convex domains	219
Two-dimensional power-associative algebras	158
ARTICLES BY AUTHOR	
Abramson, Morton, Certain distributions of unlike objects into cells	214
Amir-Moez, A. R. and Newman, T. G., Geometry of generalized inverses	33
Aucoin, A. A., On the leaf curves	156
Beesack, P. R., On improper multiple integrals	113
Bleick, W. E., Relation between correlation and eccentricity	149
Bosch, W. and Krajkiewicz, P., A categorical system of axioms for the complex numbers	67
Bruyr, D. L., Some comments about definitions	57
Burkill, H., A note on linearity	75
Burns, J. C., Morley's triangle	210
Buschman, R. G., On divisor functions	276
Chand, D. R. and Kapur, S. S., On convex polyhedra	202
Cunningham, F., Jr., Choreographic proof of a theorem on permutations	154
Diekhans, Carl. See Hess, A. L.	
Dotson, W. G., Jr., A note on generalized semilinear transformations	147
and Savage, R. G., A class of functions having elementary integrals for arc length	42
Edelstein, M., Generalizations of the Sylvester problem	250
Ehret, Harold, An approach to trigonometric inequalities	254
Everett, C. J., Inequalities for the Wallis product	30
Feichtinger, Oskar and McAllister, B. L., Binary relations as Boolean matrices	8
Finney, R. L., Dynamic proofs of Euclidean theorems	177
Fraenkel, A. S., Economic traversal of labyrinths	125
Gibson P M Solutions of $A^k + B^k = C^k$ in nonsingular integral matrices	275

(UM

Giesy, D. P., A differential-functional equation; the complex case	263
Givens, Clark, An exercise in vector identities	153
Goldberg, Michael, The packing of equal circles in a square	24
Graham, R. L. and Pollak, H. O., Note on a nonlinear recurrence related to $\sqrt{2}$	143
Greenstein, D. S., On the number of subsets of a finite set	36
Grimm, C. A., A note on the vector product $a \times (b \times c)$	150
Hagis, Peter, Jr., Relatively prime amicable numbers of opposite parity	14
, Axis rotation via partial derivatives	211
Haruki, Hiroshi, On a Laplace integral	151
Heath, S. H., The existence of finite Bolyai-Lobachevsky planes	244
—— and Wylie, C. R., Jr., A geometric proof of the nonexistence of PG	192
Hess, A. L. and Diekhans, Carl, The number of segments needed to extend a cube to N dimen-	
sions	189
Hickey, H. W., More on vector representation of rigid body rotation	38
Hoffman, A. E., The Gram-Schmidt process is not so bad!	261
Ivanoff, V. F., The circumradius of a simplex	71
Jennings, S. A., Policy on Book Reviews	1
Jordan, J. Q. and O'Malley, J. M., Jr., An implication of the Pythagorean theorem	186
Kapur, S. S. See Chand, D. R.	
Klamkin, M. S., On some soluble Nth order differential equations	272
and Newman, D. J., Extensions of the Weierstrass product inequalities	137
Krajkiewicz, P. See Bosch, W.	
Kuehls, E. A., The truth-value of $\{ \forall, \exists, P(x, y) \}$ : a graphical approach	260
Kupperman, R. H. and Smith, H. A., A note on the equivalence of five theorems in analysis	81
Laidacker, Michael, A new necessary and sufficient condition for linear dependence of vectors	
in a finite dimensional vector space	157
Langford, Eric, A problem in geometrical probability	237
Lubin, C. I. and Macintyre, A. J., On e and its approximation	98
Macintyre, A. J. See Lubin, C. I.	
Makowski, Andrzej, Remark on the paper "Sums of squares of consecutive odd integers" by	
Brother U. Alfred	212
Malesevic, J. V., A direct proof of the Steiner-Lehmus theorem	101
Maxfield, J. E., A note on N!	64
McAllister, B. L. See Feichtinger, Oskar.	
Meyer, P. R., A short proof of the Urysohn metrization theorem	268
Moore, D. H., Complex number algebra as a simple case of heaviside operational calculus	269
Moran, W. and Pym, J. S., On the construction of the real number system	257
Mulcrone, T. F., In memoriam Samuel T. Sanders 1872-1970	175
Newman, D. J. See Klamkin, M. S.	
Newman, T. G. See Amir-Moez, A. R.	
O'Malley, J. M. See Jordan, J. Q.	
Pellicciaro, E. J., A representation formula for the solutions of the second order linear differ-	
ential equation	77
Pervin, W. J., Binary digital arithmetic	41
Petticrew, J. W., General subtraction	145
Pollak, H. O. See Graham, R. L.	
Pym, J. S. See Moran, W.	
Reich, Simeon, Two-dimensional lattices and convex domains	219
Robertson, J. M., A comparison of the Archimedean and completeness properties	92
Robinson, S. M., A short proof of Cramer's rule	94
Roelman, E. L., Tangent planes and differentiation	1
Savage, R. G. See Dotson, W. G., Jr.	
Schwartz, B. L., An improved solution to "instant insanity"	20
, Defining the interchange of a loop	141
Shantaram, R., On an interesting metric space	95

Shipman, D. C., A new proof of a combinatorial identity	162
Sholander, Marlow, On defining the sine and cosine	72
Siller, Harry, On the separability of the Riccati differential equation	197
Smith, H. A. See Kupperman, R. H.	
Stanton, R. G., A representation problem	130
Stern, S. T., Seminatural systems as nonempty, well-ordered sets without last element	93
Thompson, R. L., Open mappings and the fundamental theorem of algebra	39
Townsend, C. G., Congruence-preserving mappings	37
Trigg, C. W., A property of third order gnomon-magic squares	70
Wallace, E. W., Two-dimensional power-associative algebras	158
Webster, R. J., Morley's triangle theorem	209
White, J. T., A note on arc length	44
Wylie, C. R., Jr., An all-purpose, 'floating-point' chart for the elementary arithmetic opera-	
tions.	82
See Heath, S. H.	
Young, S. S. H., An arithmetical problem involving the sum of integers in A.P	89

#### **BOOK REVIEWS**

EDITED BY D. ELIZABETH KENNEDY, University of Victoria

Names of authors are in ordinary type; those of reviewers in capitals and small capitals.

Khinchin, A. Y. The Teaching of Mathematics, R. E. PINGRY, 45.

Lang, Serge. A First Course in Calculus, C. R. MIERS, 221.

. A Second Course in Calculus, IVAN NIVEN, 277.

Paige, D. D., Willcutt, R. E. and Wagenblast, J. M. Elementary Mathematics, R. S. Pieters, 45.

Peeples, W. D., Jr. See Wheeler, R. E.

Staib, J. H. An Introduction to Matrices and Linear Transformations, J. V. MICHALOWICZ, 220.

Stark, H. M. An Introduction to Number Theory, A. A. Mullin, 223.

Wagenblast, J. M. See Paige, D. D.

Wheeler, R. E. and Peeples, W. D., Jr. Modern Mathematics for Business Students, B. W. Jones, 163.

Willcutt, R. E. See Paige, D. D.

#### PROBLEMS AND SOLUTIONS

EDITED BY ROBERT E. HORTON, Los Angeles Valley College

### **PROPOSALS**

Avery, C. W., 103 DeJoice, John, 48 Demir, Huseyin, 103, 166, 278 Edgar, H. M., 103 Hafstrom, J. E., 226 Hunter, J. A. H., 47, 225 Just, Erwin, 103, 226, 279 Kung, S. H. L., 103, 279 Lind, Douglas, 226 Lupas, Alexandru, 279 Marshall, Arthur, 166

Martino, M. J., 48 NSF Class, University of California at Berkeley, 102

Parker, F. D., 166
Pollatchek, A. E., 103
Rabinowitz, Stanley, 103, 166
Raifaizen, Claude, 279
Reich, Simeon, 48, 279
Schaumberger, Norman, 48, 226
Sholander, Marlow, 48
Siemann, Robert, 278
Sitomer, Harry, 166
Sivaramakrishnan, R., 103
Tiner, J. H., 165

Tiner, J. H., 165 Trigg, C. W., 48, 226 Usiskin, Zalman, 48 Walker, A. W., 226

Page, Warren, 166

### SOLUTIONS

Allen, A. O., 51 Avery, C. W., 288 Bankoff, Leon, 49, 229, 233, 280, 285 Beane, Donald, 106 Bordelon, D. J., 286 Brown, J. L., Jr., 170 Carlitz, L., 49, 171, 232 Corliss, G. F., 108 Diano, S. M., 227, 228 Dodge, C. W., 228 Duncan, D. C., 49, 55, 168 Edgar, H. M., 288 Fox, W. F., 54 Goldberg, Michael, 105, 168, 169, 281 Hickey, H. W., 284 Inn, Y. J., 284 Jansson, Birger, 230 Knight, Bill, 109

Kohler, Alfred, 109 Lind, Douglas, 53 Morrison, E. E., 230 Nettheim, N. J., 229 O'Shaughnessy, C. D., 107 Papp, F. J., 282 Pollatchek, A. E., 288 Ringenberg, L. A., 167 Rohde, Steve, 283 Schachter, S. O., 280 Schmeichel, E. F., 52, 106, 231 Schwartz, B. L., 170, 231 Szeto, Mabel, 285 Thomas, P. D., 110, 167 Wilke, K. M., 50, 167 Wilkins, J. E., Jr., 53 Yocom, K. L., 56 Zujus, Alexander, 53

Comment on Problem 699, C. W. Trigg, 173
Comment on Problem 716, Frederick Mosteller, 111
Comment on Problem 735, C. W. Trigg, 288
Comment on Problem 736, C. W. Trigg, 289
Comment on Problem 737, C. W. Trigg, 234

#### **Quickies and Answers**

The page on which Quickies appear is in parentheses following the number of these problems: the page on which the Answers appear is in boldface. 468, 469, 470, 471, (56) (36); 472, 473, 474, 475, 476, (112), (97); 477, 478, 479, 480, 481, (174) (124); 482, 483, 484, 485, 486, (235–236) (185–186); 487, 488, 489, 490, 491, (291) (249).

Comment on Q411, C. W. Trigg, 111 Comment on Q459, Sidney Spital, 174 Comment on Q466, J. L. Brenner, 290 Comment on Q470, Sid Spital, 235 Comment on Q472, Samir K. Kar, 290 Comment on Q476, Paul A. Oskay, 291